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THE ENVIRONMENTAL IMPACT ANALYSIS FOR THREE MANGROVE SPECIES OF INDIAN SUNDERBANS

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ABSTRACT

The paper deals with three mangrove species of Indian Sunderbans namely, *Heritiera fomes* Buch.-Ham., *Nypa fruticans* Wurmb. and *Acrostichum aureum* L. which have become endangered due to different environmental impact on them. The main factors causing rapid decrease in the population of these three species are (i) Lack of fresh water supply, (ii) Human population pressure, and (iii) Over exploitation. The problem has been assessed and measures suggested to save the three species.

During the last fifty years three mangrove species namely, *Heritiera fomes* Buch.-Ham., *Nypa fruticans* Wurmb. and *Acrostichum aureum* L. have practically disappeared from the Indian Sunderbans. The former two species are of high economic value to the villagers of lower Bengal. The last one is a fresh water fern but can tolerate brackish water. These three species are elements of the same formation which comes in the later stages of mangrove plant succession. Their growth requires sufficient amount of fresh water and sufficiently high level of the habitat which is not regularly inundated by saline water.

The author could not locate these three species in Sagar Island, Fresergunj, Bakkhali, and a stretch between Canning and Sajinakhali except one sapling of *Heritiera fomes* in Sagar Island in 1967 which could not be found in the next visit in 1971. Blasco (1975), after a long search could find a few plants of *Heritiera fomes* and *Nypa fruticans* in Champta forest blocks. The area is within the Tiger Project.

The main environmental impacts causing rapid decrease in the population of the three species are :

(*i*) *Lack of fresh water* :

The mangrove vegetation of the Sunderbans suffers from lack of fresh water supply. During some part of the year the mangrove species are inundated by marine water and not by brackish water. There is no doubt that the Indian Sunderbans developed under the best conditions when the main flow of the Ganges traversed through this region. Two important natural events namely, the tilting of the Bengal delta and the eastward displacement of the main flow of the Ganges, deprived the Indian Sunderbans from getting sufficient amount of fresh water for healthy growth of the mangrove species in general and the survival of the three species in particular.

(*ii*) *Human population pressure* :

Inspite of the unfavourable natural conditions threatening the existance of Indian Sunderbans, it still covers a vast area. But sooner or later it may be a victim of human population pressure of West Bengal. The city of Calcutta, which is not far away from the mangroves, and its surroundings have a high concentration of human population. The land use management in the Indian Sunderbans has started since long. During the last 100 years 1200 to 1500 sq. km of the mangrove forest areas have been distributed for land use other than forest (Banerjee, 1964). These lands are being

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used for the cultivation of "Patnai" rice and establishment of villages.

Man is the most dangerous ecocide. When they are placed so near to the natural forest, the natural equilibrium is bound to be deteriorated owing to their impact on it.

(*iii*) *Over exploitation* :

Heritiera fomes was considered to be the most important species of the Sunderbans, even at the beginning of this century. It was famous for its widespread occurrence in the Sunderbans and for the quality of its wood. The wood was extensively used in boat making. The stumps were used as poles for the construction of cottages owing to their durability in saline habitats. Therefore, people living in lower Bengal use this species indiscriminately.

Nypa fruticans is also an associate of *Heritiera fomes* formation. The long tough leaves of this palm was used extensively by the poor villagers of lower Bengal as a roofing material for their cottages. The common practice of exploiting the leaves of this species is to leave only two leaves per plant. But with only two juvenile leaves the plant can not survive for a long time. Moreover, the deer population of the Sunderbans is very fond of the roots of the species. The impact of over exploitation is the most serious cause for its rarity.

Acrostichum aureum is also an associate of *Heritiera fomes* formation. This fern, though growing in mangroves, is really a fresh water species but can tolerate brackish water (Rao and Mukherjee, 1973). Due to lack of fresh water supply this species has become rare.

This is high time to take proper action to protect the three endangered species of Indian Sunderbans. Therefore, to reestablish the proper habitat and environment for the growth and development the following measures are suggested :

(i) Sufficient amount of fresh water from the Farakka Barrage should be channelised through the Bhagirathi-Hooghly river system. This river system should be connected with the creeks of the Indian Sunderbans.

(ii) The whole of the Sunderbans should be declared a National Park to stop the exploitation of the forest at least for the next 50 years. Proper law should be enacted and enforced rigorously.

The Sunderbans, at head of the funnel shaped Bay of Bengal, poses the most serious threat from surges driven by storm waves. It is not uncommon to have 4 to 5 cyclones per year in this region. Therefore, to save the lower Bengal from the fury of the sea, the Sunderbans should be protected at any cost.

REFERENCES

Banerjee, A. K. Forests of Sunderbans. Centenary Commemoration Volume. West Bengal Forests, pp. 166-175. 1964.

Blasco, F. The Mangroves of India. All India Press, Sri Aurobindo Ashram, Pondicherri-India. 1975.

Rao, T. A. and A. K. Mukherjee, Is *Acrostichum aureum* L. truly a mangrove fern ? *Curr. Sci.* 42 : 546-547. 1973.